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injury, involving cornea and ciliary region of right eye; at the time of observation the right eye was totally blind, the left with serous iritis, S.=$\frac{20}{100}$; the right eye was enucleated, and soon after the left became still worse; a week later the nerve was resected and improvement began at once; at the end of four weeks the left eye had regained normal acuteness of vision.

Case 9.—E. W., male, æt. 58; while sawing wood slipped, and in falling brought his hand violently in contact with his right eye; when seen a few miuutes later no external lesion was found; the anterior chamber was filled with blood; the margin of the iris was detached in the upper and outer quadrant; midway between the cornea and equator there was an apparent subconjunctival laceration, subsequently shown to be rupture of the sclerotic, ecchymosis of all parts in the vicinity of the globe. No great amount of inflammatory disturbance ever appeared, the pain was inconsiderable, and with absorption of blood vision improved, and although no view of the interior could be obtained, in seven weeks the vision had increased so that he counted fingers at 6 feet. Without any warning, between 10 A.M. of one day and 9 A.M. of the following day, sympathetic plastic iritis appeared, he stating that he noticed slight discomfort of the left eye upon arising, and thought he could not see as well; examination showed posterior synechiæ and the presence of flocculent lymph in the aqueous. As might be expected, in so recent plastic iritis, the points of attachment yielded to atropine instillations, the pupil dilating irregularly; enucleation was made at once, and the patient sent to bed; the iritis proved very persistent, but eventually yielded, the patient visiting the office 4 weeks after the enucleation, for the first time; S.=$\frac{6}{25}$. Three years later I found slight pericorneal injection, iris freely movable, and vision the same.

I think, however, that where plastic iritis has existed several days, and especially if atropine fails to loosen the adhesions, there is nothing to gain by enucleation during the active stage; but if, upon subsidence of the inflammation, there remains an apparently good opportunity to secure vision in the sympathetically affected eye, I believe it is best to enucleate before making an iridectomy.

I have encountered but 3 cases in which I have made certain, that the sympathetic inflammation had been confined to the iris (or to the iris and cornea); in all of them a fair amount of vision was obtained by iridectomy following enucleation.

There is a suggestive scarcity of literature upon the subject of treatment of sympathetic ophthalmia after its full development. When the sympathetic inflammation is limited to the iris, serous or plastic iritis, there is still probability of affording relief; but when irido-cyclitis or irido-choroiditis occurs sympathetically, there is but little for the surgeon to do. I have not referred to the operation of cutting the ciliary nerve or the optic nerve posteriorly, or to evisceration of the globe, with or without the implantation of an artificial vitreous. I have had no personal experience with either of them, and from reports of the first, and observation of the last, I have not been favorably impressed with them.

In so serious a matter as the effort to preserve one eye after its fellow is functionless, or is likely to become so, considerations of personal appearance are of secondary importance, safety of vision being the object sought for, at every sacrifice but that of life; and I believe that patients have the right, if they so desire, to risk life for the preservation of vision. The total loss of vision is but little less serious than the loss of life, and the same rules as to efforts to preserve vision apply, as are foremost in the mind of the surgeon who operates to save life. The surgeon selects in amputation the point which will give to his patient the greatest possible opportunity for life; we select in the cases threatened with sympathetic ophthalmia the operation which experience has shown will give the greatest opportunity for vision.

DENTAL LESIONS CAUSING FACIAL NEURALGIA AND OTHER NEURAL PHENOMENA.

Read in the Section on Dental and Oral Surgery, at the Thirty-Eighth Annual Meeting of the American Medical Association, June, 1887.

BY ARTHUR B. FREEMAN, M.D., D.D.S.,
OF CHICAGO, ILL.

When invited by the Secretary of this Section of your Association to prepare a paper to read before so intelligent a body of scientific men, representing the two noblest professions to which men have ever devoted time, toil or study, I instinctively shrank from the duty imposed with the conviction that there were many older and more experienced men in the profession who could present subjects of far greater interest than I; but your Secretary persisted and I reluctantly consented to prepare a paper on the above named subject. While casting about for a topic on which to write, this subject was suggested to my mind, not because of anything of an original character which I had to present, but by a little episode to which I was compelled to listen while at dinner, and which may not be wholly out of place if related at this time.

On the above occasion I was "given a severe pain"—not neuralgic in character, however—by a female fanatic on the subject of metaphysics, who detailed in minutiæ a most extraordinary cure by her metaphysician of a very dangerous attack of facial neuralgia, which had signally baffled the skill of several of the "Eddy Faith School" and other way-up Christian scientists, and this wonderful man had only to convince his patient that the pain was in her mind and it was gone forever. As detailed by her, an educated dental practitioner of to-day would not require a very active imagination to diagnose this as the old, old story of pulpitis of three or four weeks' duration; the pulp, after a lingering death, had finally expired, to be almost immediately succeeded by suppuration, pericementitis, and the accompanying pain and œdema, of perhaps unusual severity. Fortunately for this latest metaphysical ass in attendance,

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the pus had formed and the abscess had pointed when he was called to this case, of a class in which he had never been foiled.

Who can wonder that two back-to-back consultations with such a miraculous man was enough to cause this abscess, or any other, for that matter, to discharge itself freely? The reparative efforts of nature here wrought a tedious cure and an imposter secured glory alone due to her. As I listened I thought how much more pain-saving and scientific it would have been for a general or dental practitioner to have introduced an appropriate devitalizing application in the early stage of this neuralgic affection and in twenty or thirty minutes' time have saved this poor foolish mortal three or four weeks of excruciating agony.

The great number and endless variety of facial neuralgic manifestations have perhaps tortured more people, attracted the attention and baffled the skill of more practitioners of medicine, and luxuriantly supported more quacks, than any other one disease, and they have not, except in isolated cases, wrought more than a temporary relief. Why? Because they have not found the cause and then removed it.

What is known in medical literature of this pain-demon which constantly or periodically mars the comfort of so many thousands of cowardly, and some hopeless, human beings, and causes the simple endurance of this vast amount of suffering, which saps vitality, wears out the strongest frames and causes disease in those who otherwise might enjoy a life reasonably exempt from ill health? I am compelled to answer, nothing. What space is accorded to the subject in the several treatises on the practice of medicine which I have consulted is devoted to the acknowledgement of the ignorance of the subject as regards lesions of the teeth, and a few glimmering generalities on etiology and non-lesion in the affected nerve trunk, etc. Indeed, one eminent writer on "Practice" goes so far as to record the following brilliant assertion: "Caries of the teeth is an occasional cause of tri-facial neuralgia, but it is by no means frequently referable to this cause." He evidently takes it for granted that "caries" is the only ill which a tooth is heir to.

So far as I have been able to discover, and I have examined the literature somewhat carefully, I have found only one writer who has accorded to dental lesions, as a causative agency of facial neuralgia, that place which it deserves, and I think even he was too modest in his assertion of their influence.

It is with the desire to add something to the literature of the subject, and also with the hope that, if many medical practitioners do not listen to what I may present, some seed may at least fall on fertile soil—as I am confident it will—and bring forth its fruit, and also a sensibility to the sufferings of our patients and the thousands who are not our patients, but the dupes of quacks and nostrums, that I am persuaded to cope with this subject.

With these preliminary sentences I will enter more or less minutely into the discussion of Tic Douloreux, and the principal lesions of the teeth which may provoke it, and at the same time introduce well authenticated examples from daily practice by way of illustration of some of the neural phenomena resulting.

To quote a current definition of the term neuralgia, it is a disease the chief symptom of which is very acute pain, exacerbating or remitting, which follows the course of a nervous trunk, extends to its ramifications and seems, therefore, to be seated in the nerve. I shall take the ground, notwithstanding the arguments pro and con, that neuralgia is a phenomenon rather than of itself a distinct disease—simply the expression of an acute or remote lesion. The derivation of the word itself is from two Greek roots, *νεῦρον* (neuros), meaning nerve, and *ἄλγος* (algos), meaning pain; thus its simplicity of meaning is pain in a nerve. Any pain, therefore, may very properly be called neuralgia, and to a great extent is by the masses, unless of such acute character and so localized that it cannot by any possibility be mistaken for a toothache, toeache, headache or backache.

It is in this general sense that I shall employ the term in this paper, as it is in this general sense that the term is used by the medical profession as well as by the laity. It is a poor philosophy, indeed, to reason that any effect is produced without a cause. If neuralgia is a disease, what is its lesion? If it is simply a phenomenon, then what are the most frequent causes of its expression? I believe that in at least nine out of ten of all facial neuralgias the sole and only cause is in, and associated with, the teeth.

Doubtless the members of this Association will agree that the conditions known as anæmia, debility, syphilis and miasma are predisposing causes, and I think they will also agree with me that the *prima facie* cause lies nearer the pulp-chamber of the tooth and has a more tangible union with the trifacial nerve than have these general conditions.

The lesions of the teeth may be divided into two classes: pulp lesions, or those arising from irritation within the teeth themselves; and pericemental lesions, or those manifesting themselves from irritation outside the apical foramen.

Mentioning these pathological conditions in the order of their minimum importance, as they occur to me; first, noticing the pulp lesions, we have sensitive dentine as sometimes noticed in superficial and simple caries. Irritation from this condition occurs most frequently in patients of low grade temperament with a predominance of the nervous basis and asthenic constitutions. The symptoms may range from uneasy sensations, which may be located about the teeth, jaws, cheeks, eyes, nose, etc., to positive neuralgic pain or paralysis, and are usually aggravated by contact with sweets and sours and rendered intense by the simple touch of an instrument.

Secondly.— Deep-seated caries may or may not cause pulp irritation as above described, in proportion to nearness of proximity of the dissolution of calcific salts to the pulp itself, while the symptoms most to be relied upon are increased pain on contact with extreme thermal irritants, and cessation or remission on application of pain obtunding remedy.

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Thirdly.—Complicated caries, including all cases of almost or complete exposure of the pulp, dying pulps from too near proximity of metal fillings or other predisposing causes. This is perhaps the most fertile of all the lesions, and at the same time most easily diagnosed and treated.

The symptoms may be paroxysmal and remittent, intermittent or constant pain; not always positively located; very severe during paroxysms, throbbing or jumping and usually increased at night.

Fourthly.—Calcific formations within the pulp-chambers, which are all pathological conditions, sometimes giving rise to types of neuralgia difficult in diagnosis and obstinate in treatment.

These conditions are usually found in patients of sthenic constitution, and as classified and defined by Prof. G. V. Black in the "American System of Dentistry," are six in number and as follows:

1. Secondary Dentine.—A new growth of dentine more or less regular in formation, excited by abrasion, decay or other injury by which the nerve fibrils are subjected to irritation at their distal ends.

2. Dentinal Tumor within the Pulp-Chambers.—An erratic growth of dentine into the pulp-chamber united to the wall by a pedicle, the structure usually being very irregular.

3. Nodular Calcifications among the Tissues of the Pulp.—These are smooth or nodulated stony masses of dentinal tissue deposited among the pulp tissues as a result, probably, of irritation.

4. Interstitial Calcification of the Tissues of the Pulp,—which is the counterpart of calcifications elsewhere in the body.

5. Cylindrical Calcifications of the Pulp.—This form occurs infrequently, and always in the root canals, the tissues of which are probably in a state of fibrous degeneration.

6. Osteo-Dentine.—An erratic formation showing both lacunæ of bone and dentinal tubes.

The lesions of this classification are somewhat similar in the manifestation of symptoms; by no means always producing neuralgic trouble, though pain from secondary dentine impinging on the peripheral termination of the nerve fibrillæ of the pulp, causing its pressure and recession, and chronic irritation from pulp nodules and erratic growths, is not of unfrequent occurrence.

Fifthly.—Abrasion of the teeth, either mechanical or chemical, is not an occult but frequent cause of distressing and prolonged neuralgic pain. The wearing down of the crowns of the teeth from attrition or otherwise, causing irritation, congestion, pressure on nerves and consequent reflex pain.

As has been said, any and all of the above pathological conditions, as well as many others connected with the teeth, may cause hyperæmia of the pulp, predisposition to its death and all possible variety in neuralgic phenomena.

Among the most frequent and painful of the second class, or pericemental lesions, we have:

1. Pericementitis.—This is usually an acute inflammation caused by irritation of the pericemental membranes by mephitic gases escaping from the pulp-chamber through the apical foramen, resulting from putrescent pulp.

The symptoms are usually decided soreness, acute throbbing pain beating with the circulation, violent suffering upon concussion of tooth, obliterated health line, dull heavy pain diffused over the entire side of face, neck and head, also a peculiar bluish appearance of tooth on comparison with adjacent ones, and lack of pain on thermal change.

In many instances the escape of mephitic gas is slow, the irritation of pericementum correspondingly chronic, in which condition pain of a reflex character is frequent and severe, and has been observed to extend over a period of many years.

2. Exostosis-dentium.—A bony enlargement of the roots of teeth caused by slight and continued peridental irritation, exciting deposition of salts at the point of irritation.

The varieties may be nodular, circumscribed or apical or diffused, and while the condition is not always accompanied by pain, very many complicated cases arise in practice.

3. Absorption of Permanent Roots.—A pathological condition analogous to absorption of other hard structures which, leaving the end of the root rough, spiculated and uneven, almost universally causes irritation resulting in severe reflex manifestations.

4. Retention of diseased roots.

5. Pyorrhœa Alveolaris and accretions of salivary calculous impinging on the gingival border.

6. Mal-eruption of and Impaction of the Wisdom Teeth.

7. Diseased Antrum arising out of the foregoing or other causes.

I am confident every dental practitioner before me can cite from his own practice case after case of facial neuralgia of severe type as an effect produced, illustrating each of the above distinct lesions as the cause.

In connection with the close of this paper I wish to call your attention to some of the other very interesting neural phenomena which may be caused by dental lesions, through inosculation of the nerve-branches and reflex action, and perhaps I cannot do this in a more interesting way than to briefly relate the histories of a few cases from practice as related by those who have observed them.

First: A case copied from the June number (Items of Interest) of the *Dental Independent*, and taken by that journal from the *London Dental Review.* The patient had suffered fourteen years with dreadful pain in the eye, accompanied by a continual flow of tears and intolerance of light. A diseased tooth was extracted from the upper jaw on the same side on which the painful eye was situated, when the the eye was speedily restored to health.

Second: An unusually interesting case of paralysis of an arm from reflex odontalgia through inosculation of the trifacial nerve and brachial plexus, as related to the students of the Philadelphia Dental College by Prof. J. Foster Flagg. A Western Judge (from Arizona, I think), had suffered with paralysis of an arm for some months before going to Philadelphia for medical treatment, which he had received there for a space of three months, without success, when he incidentally called on Dr. Flagg for dental

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services. Had experienced no pain in teeth, but on examination complicated caries was found on distal surface of a lower left bicuspid. On probing same there was decided arm response, *i. e.*, pain, numbness, etc., in fingers and hand. The pulp was sedated and devitalized, and immediately arm recuperated, and in something like a week the paralysis was completely cured.

Third: Another case related by Prof. Flagg, of intermittent paralysis of the muscles of deglutition caused by general dental irritation from sensitive dentine and vitiated oral fluids. Patient was a young lady some 28 or 30 years of age, who was at times afflicted with paralysis of deglutory muscles, intense paroxysms of pain, usually excited when sensitive dentine was irritated by pressure of foods or the tongue, and also brought on in all their intensity by the touch of an instrument, when the agony of expression of the countenance and drooling of saliva were pitiful. The introduction of ½ dozen amalgam fillings wrought a complete cure.

Fourth: A case of severe ocular pain occurring in the practice of my preceptor, Dr. Daniel B. Freeman, of this city, some years since. The patient had suffered from a painful eye and been under the treatment of an oculist for six months without improvement. While waiting for the arrival of the physician one day he complained of terrific supraorbital pain, and entreated that something be done for his relief, and in compliance tr. of aconite was applied over supraorbital foramen, when instantly the pain flew as if by magic to a partially covered root of a tooth on the same side of face. The root was extracted, found to be exostosed, and the pain in the eye never returned.

Finally: A case of diffused facial neuralgia from abrasion, secondary dentine and exostosis. Patient 50 years of age, sthenic constitution, had suffered from neuralgia for a year and a half or two years; four roots were present and the balance of the teeth in the upper jaw much abraded from attrition. The roots were extracted and found exostosed. Pain still continued and finally, at two or three sittings, the abraded teeth were all extracted, and no further trouble has been experienced.

I would not have you understand me to say that all suffering is caused by tooth lesions, neither do I assert that all pains and aches traceable to the teeth for their cause, rightfully or technically come under the head of neuralgia. I do claim that very many more of them than is suspected are occasioned by these lesions. To the end of time we will all doubtless be frequently brought face to face, in our efforts to diagnose obscure cases, with a black, impenetrable wall, so high and broad that we cannot see over or around, so thick that no ray of light will shine through. This must necessarily be the case, but to find the cause and remove it should be our highest and chief aim; failing in this, we can do no less than our predecessors have done—treat facial neuralgia on the sedative plan.

PUERPERAL TETANUS.

Read before the Medical Society of the District of Columbia, May 18, 1887.

BY C. V. BOARMAN, M.D.,
OF WASHINGTON, D. C.

I was summoned in haste to see Mrs. T., in her second confinement, March 16, 1886, at 8:30 A.M. The messenger stated that there appeared to be serious trouble, as she had been in labor since the preceding evening, a midwife being in charge. I at once went to the assistance of the woman, and found her suffering acutely and anxious for aid. Upon making an examination, my hand encountered the child's hand and arm (the former lying in the vulva); the os uteri was so firmly contracted around the child's shoulder that it was impossible for me to force my hand beyond it, nor could I dilate it, although I worked assiduously for over an hour. The womb was in a constant state of action, brought about by numerous doses of fl. extract of ergot, administered by the midwife in charge the preceding night, an ignorant old woman. Seeing that it would be impossible for me to accomplish podalic version alone, I asked for and obtained consultation. Dr. A. McWilliams having been called, he made several ineffectual attempts to introduce his hand into the uterus.

Concluding that it would be impossible to either turn the child or convert it into a head presentation, we then called the husband and laid before him and the wife the two operations, Cæsarean section and embryotomy; they would not allow the former, but willingly gave their consent to the latter, the child having been dead some time.

Having administered ether to the patient and produced full anæsthesia, I again attempted to introduce my hand into the uterus, but could not overcome the rigid contraction of the os uteri, which hugged the child's shoulder so tightly that I could not even insinuate the end of my finger between it and the child; Dr. McWilliams also made an attempt to do so but failed.

Seeing the absolute impossibility of delivering the child, we at once, with the assistance of Dr. Briscoe, proceeded to perform embryotomy. After working for over two hours we succeeded in removing the child, which was far advanced in decomposition. After delivering the placenta the womb contracted nicely, the woman reacted from the anæsthetic, and appeared to be quite comfortable.

March 17.—Mrs. T. was very cheerful and doing well; asked for food, and said she had passed a good night. Lochia normal and satisfactory. I again saw her late in the evening, and found her restless and complaining; slight febrile reaction; quick pulse; and some abdominal tenderness.

The mother of the patient requested me to see a man in the next room, stating that he had been sick for some time with erysipelas, and that he had a large abscess developing beneath his right ear. I declined after giving my reasons for so doing, and ordered his immediate removal to a hospital if possible. That being out of the question he was carried to a distant part of the house and the room well aired and fumigated;

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